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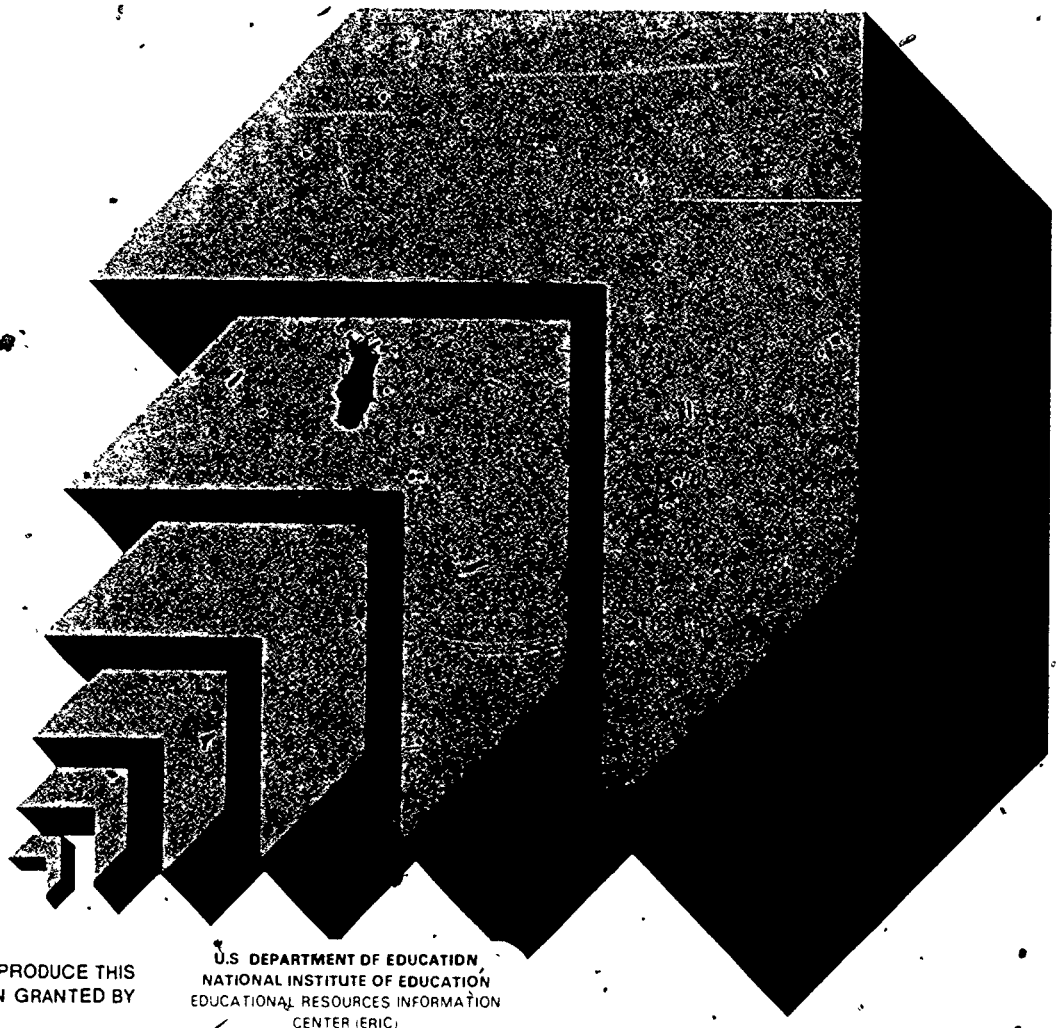
ABSTRACT

This booklet, prepared by the United States Chamber of Commerce, is intended to help create a better public understanding of how productivity affects this country and to suggest how people can change public policy in favor of a revitalized America. The booklet is organized in five sections. The first section defines productivity and introduces the problem of the decline of productivity in the United States; these concepts are augmented in the second section by a discussion of measures of productivity and real earnings as related to productivity. In section 3, the economic history of the United States is explored as it relates to the slowdown of productivity in recent years. Section 4 further explores the productivity problem--what caused it, what has happened to investment incentives, and what the experts say; some solutions are proposed in the last section. An appendix to the publication contains tables showing real spendable average weekly earnings, 1947-1980; United States spending on research and development; growth rate of the real net capital stock; average age of United States equipment and structures, 1925-1980; and cash flow as a percent of Gross National Product. (KC)

Productivity, People, and Public Policy



The U S Chamber of Commerce believes that the people of this nation can no longer delay a confrontation with the productivity challenge Public policy has a direct effect on productivity, and therefore on the living standards of the American people On their behalf, the Chamber is committed to an advocacy role in public and private forums, to encourage new policies that will enhance U.S. productivity performance This effort is coordinated and directed by the Chamber's Productivity Center

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I. INTRODUCTION

What's happening to this country of ours? He put down his half-empty cup of coffee and looked across the dinner table at his wife of 26 years.

"I feel like everything we've worked so hard for is slipping away from us!"

In one way or another, millions of other American families have started similar discussions in recent times. Something is wrong! It's painfully obvious to everyone!

Inflation is taking its toll on all Americans. She sees it everytime she goes shopping. He sees it in the operation of his small business—the rising costs of materials, and the extra time and expense of keeping up with rules and regulations. He sometimes wonders if it is worth staying in business.

They are shocked at the cost of heating their home and driving their car. They have conflicting emotions when they see so many fuel-efficient foreign cars on the streets. They are impressed at how well-built they seem, but alarmed at how the Japanese and Germans seem to be outpacing us economically.

They are concerned about the erosion of their savings. They wonder how their children will be able to afford a home of their own. They see their own standard of living slipping. They just don't seem to be able to make it any more on his income alone—and so she is about to go back to work. Otherwise they simply won't be able to do the things they once did. And they'd have to give up hope of doing some of the things they'd planned to do. They worry about their retirement. They wonder if they—and their children—are simply going to have to "settle for less."

They are upset, too, about the high taxes they have to pay. They are concerned that their taxes are helping to perpetuate what they perceive to be an unfortunate change in the way many people approach life in America today. They are dismayed at what appears to be a lack of pride in doing good work, at a growing "me-first" attitude, at the widespread feeling that "government will take care of me."

The increasing concerns of average Americans like these have led to a fundamental change in this nation's political thinking.

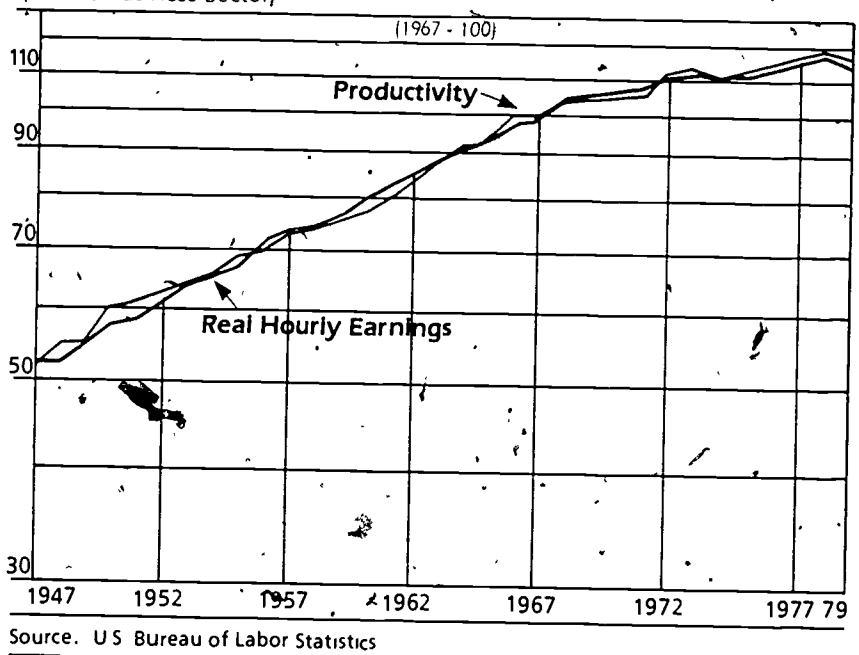
The election of 1980 provided a popular mandate for a national economic and social self-evaluation, a rechartering of our course, and the beginning of a nationwide effort to rejuvenate, revitalize, and rebuild America.

Many thoughtful people believe that our national self-evaluation should focus on *productivity*—the measure of the output of the nation's goods and services per unit of input. The U.S. Chamber of Commerce agrees—and for that reason, has prepared this booklet. Its purpose is to help create a better public understanding of how productivity affects this country of ours, and suggest how people can change public policy in favor of a revitalized America.

Figure 1

Real Earnings and Output Per Hour: 1947-1979

(Private Business Sector)



Source. U S Bureau of Labor Statistics

II. PRODUCTIVITY AND LIVING STANDARDS

Why focus on Productivity? Productivity is the term used to describe the measurement of goods and services produced by a given input of resources—labor, energy, or capital. It may measure the output of an individual, a company, an industry, a region, a nation.

Productivity has a close statistical relationship with real hourly earnings—the buying power of the people—because one cannot buy something unless it is produced. Productivity increases when more goods and services are produced per man-hour. This means there is more to buy and consume for the same input price. So real hourly earnings go up. The reverse is equally true—when productivity declines, fewer goods and services are produced, so real hourly earnings decrease.

For this reason, productivity is considered an "index of the nation's economic welfare." It measures the nation's production efficiency and overall well-being *at a given point in time*. A closely related concept is "*productivity growth.*" It measures changes in *efficiency and well-being over time*—and therefore indicates whether buying power is rising or falling.

There is an important conceptual difference between the two. When productivity declines, our standard of living declines. When productivity *growth* declines, the *rate of improvement* of our standard of living declines.

As productivity goes, so goes the nation's buying power.

Figure 1 shows the close relationship between real hourly earnings and productivity—focusing on the private business sector—in the period since World War II.

When productivity increases rapidly—as it did in the period from 1948 to 1968—real hourly earnings also increase rapidly. This translates into a steady rise in the nation's standard of living. When the increase in productivity slows down—as it did from 1969 to 1978—growth in real hourly earnings slows down as well, and our standard of living rises less rapidly. When productivity actually decreases—as it began to do in 1978—real hourly earnings decline, and our standard of living drops.

The problem today is caused by the continuing decline in productivity growth.

Today in America, the problem is not

the level of the nation's *productivity*. We still produce more goods and services per worker than any other country. But as our productivity growth continues to decline, we are rapidly losing our advantage over the rest of the world.

This means that we are having greater difficulty remaining competitive with our major trading partners in the production of goods and services. This makes it difficult to maintain a favorable balance of international trade, and contributes both to our inflation rate and unemployment.

In 1971, we experienced our first trade deficit of the 20th century, and have run almost continuous and increasingly large deficits since then. Whereas we once dominated the market for manufactured goods, we were surpassed years ago by West Germany and are now virtually equalled by the Japanese. Several American industries have been seriously affected by a flood of imported products. As a result, the American people have paid a heavy price in lost income and industrial dislocations for our decline in productivity growth.

Declining productivity growth affects all Americans.

As productivity growth slows down, stagnates, or declines, there follows a distressing reduction in real spendable average weekly earnings—what is left after Social Security, federal income taxes, and inflation have taken their tolls. During October, 1980, the average married worker with three dependents earned $82.92 a week in 1967 dollars. At the end of 1980, real spendable earnings had dropped by 7.0 percent from 1979 and *stood at a level last attained in 1961*. Other measures of real earnings, like real weekly earnings and average hourly earnings, show similar though somewhat less dramatic declines.

The American people are aware of their worsening situation. The inability to "get ahead" on just one income led millions of women into the labor force during the 1970's. Consequently, disposable income per capita has actually risen, temporarily insulating family budgets. With large reserves of potential workers dissipated, however, any future declines in earnings will bear much more directly on what a household can actually buy.

Figure 2 shows clearly how spendable average weekly earnings, expressed in 1967 dollars, have declined since 1972.

How is productivity measured? The Bureau of Labor Statistics in the U.S. Department of Labor compiles a comprehensive set of productivity measures. These measures are called "output per man-hour," and therefore have often been interpreted as representing only the efficiency of labor. But the data that result lump together the combined effects of many influences, such as new technology, capital investment, utilization of plant capacity, energy use, and management skills, *as well as* labor effort. As such, they do not permit a breakdown of the various components. For example, automating a process shows an increase in labor productivity as reported by BLS measurements — but there is no way to indicate the specific efficiency of the capital or energy involved in acquiring and operating the new equipment.

Between 1982 and 1984, the Bureau will begin publishing five new measures of productivity that will break out the individual components: labor, capital, energy, materials, plus a weighted average of the four factors, called "multi-factor" productivity.

To achieve the general measures that are now being published, the BLS computes productivity for 5 basic economic aggregates on both a quarterly and annual basis: private business; farm; non-farm business; non-farm non-manufacturing business; and manufacturing, including a breakout of durable goods and non-durable goods. Ten industries are measured on an annual basis: agriculture; construction, mining, transportation; communications, utilities; wholesale and retail trade, finance, insurance, and real estate, business and personal services; and government enterprises. In addition, annual productivity measures have been made of selected industries from 1947 to the present.

Each measure is a ratio between the level of output and the corresponding hours of all persons engaged in producing it. For the measures of national productivity, national income accounting concepts in constant dollars are used. Hours of persons usually reflect paid hours, including holidays, vacation, and sick leave in addition to hours at work.

Productivity measurements vary in their accuracy.

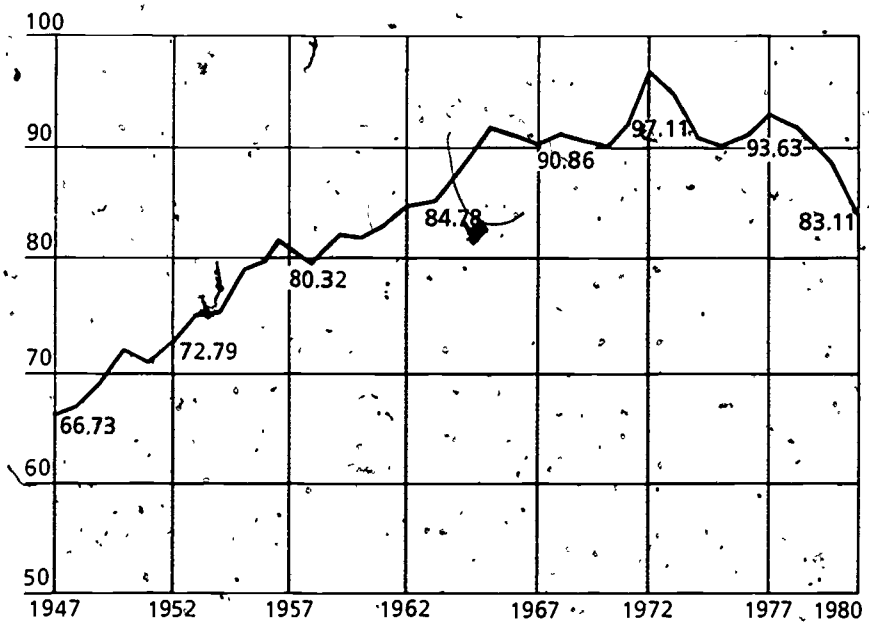
When reviewing any one of these measurements, it must be recognized that the study is by no means an exact science. Productivity measurements are most accurate for the manufacturing sector of the economy, and the production of tangible items. But this activity comprises only about 30% of total output.

The problem occurs in attempting to measure the delivery of *services*, identified by BLS as "non-farm non-manufacturing business." For example, it is not meaningful to measure the productivity of a physician in terms of the number of visits his patients make to his office each month. More appropriate would be the level of health of his patients—but that is difficult to measure accurately. Non-

Figure 2

Real Spendable Average Weekly Earnings: 1947-1980

(In 1967 Dollars)



Source: U.S. Bureau of Labor Statistics, as found in *Employment and Training Report of the President*, September, 1980, Table C-11

farm non-manufacturing business represents an increasingly important part of the national economy, amounting to 62% of the total.

Similarly, measures of productivity by industry do not necessarily indicate differences in quality. For example, metallurgical coal is of greater value than steam coal. So it pays to mine it in thinner seams even though output per hour is lower than when mining steam coal.

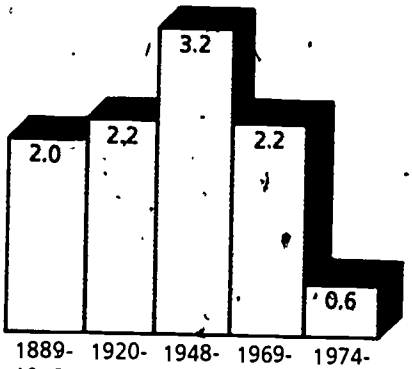
Productivity growth resulting from the introduction of better quality products, or the replacement of a product by a new item, is not easily measured either. Nor is it easy to measure a decrease in productivity because of a deterioration in product quality.

Coming up with an accurate measurement for labor input today is especially difficult. The use of paid hours as a measure of labor input overstates the actual physical input of labor. A University of Michigan study reveals that there are more paid holidays and vacations now than 15 years ago, and fewer minutes actually worked in a typical day. Similarly, some experts claim that during periods of rapid inflation rising prices distort the calculations, and cause output per man-hour to be understated.

Of course, the measurements must be interpreted properly, within an appropriate frame of reference. For example, productivity growth may vary greatly within normal short-term business cycles, and can even be affected by events such as a severe winter. Therefore, annual or shorter term productivity measures are less useful in depicting accurate trends than longer term measurements that incorporate several up-and-down cycles in output. The current productivity "problem" addressed in this booklet refers to a trend that has been taking place over a decade, rather than normal short-term aberrations.

Figure 3

U.S. Average Annual Productivity Growth: 1889-1980[1]



Source: John W. Kendrick, *Postwar Productivity Trends*, Table 3-2 for data thru 1973, supplemented by U.S. Bureau of Labor Statistics data.

[1]Labor productivity is measured for the private business sector.

Measurements of productivity growth are valuable economic tools. Despite the difficulty in assuring their accuracy, productivity measurements represent the best way known to evaluate the economic health of the nation. They are also valuable tools in many specific areas of the economy. For example, some industries use productivity growth figures to negotiate wage increases, and to highlight possible problems calling for action.

Differences in productivity growth among countries indicate changes in international competitiveness in basic industries, and serve as a basis for predicting future patterns of exports and imports.

For all its uses, productivity is difficult for many people to grasp. Yet it underlies more visible economic indicators such as inflation, per capita incomes, and economic growth. Like the human heart, productivity is hidden. But it is basic to the economic pulse of the nation.

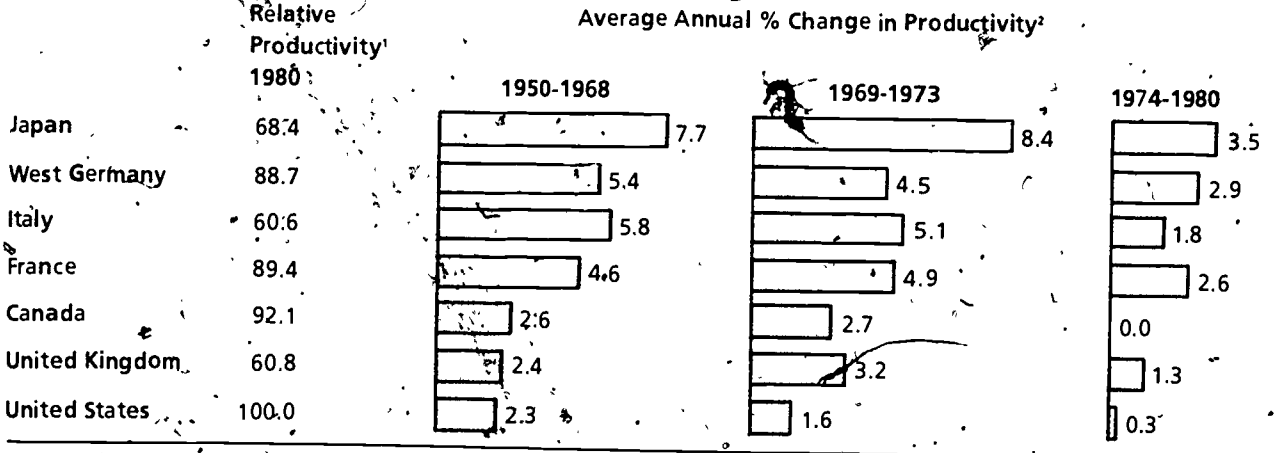
III. HISTORICAL EXPERIENCE

How did we get where we are? America's productivity growth has been plotted from 1889 to the present. Figure 3 shows how annual growth averaged about 2% in the 1889-1919 period, then increased to an average of about 2.2% from 1920 to 1947. It was during this first half of the 20th Century that we acquired the standard of living that has been so often described as the "envy of the world."

After World War II, productivity growth spurted to 3.2%—as American industry shifted the enormous amount of technology and management skill gained in wartime to the task of meeting the nation's pent-up demand for peacetime consumer goods. This was a peak period in American economic history. Living standards soared. We became the leaders of an emerging world econ-

Figure 4

Real Domestic Product per Employed Person for Selected Countries: 1950-1980



[1]Real gross domestic product per employed person using international price weights, relative to the United States.

[2]Growth in real domestic product per employed person using own country's price weights. This way of calculating productivity is used only for international comparisons, which accounts for the discrepancies with Figure 3.

Source: U.S. Bureau of Labor Statistics

omy. There appeared no limit to our wealth.

But then, after 1968, productivity growth began its drop. There were two distinct declines—to 2.2% during 1969-1973, then a precipitous slump to 0.6% during 1974-1980, for an average annual yearly rate of 1.3% from 1969 to 1980. The growth rate of productivity was negative in 1978, 1979, and 1980—the first time this has happened since data collection began in 1909. A temporary negative growth might be understandable in recession periods. But it is very distressing to experience negative growth rates during a recovery.

While this decline was taking place in the United States, other countries—notably Japan, Germany, and France—still were experiencing productivity *increases*.

Figure 4 on the previous page shows the relationship between the productivity of the United States, Japan, Germany, France, and three other major trading partners in 1980. The U.S. is referenced as 100, and the others as a percentage of the U.S. level. Canada is closest to the United States, with productivity at 92.1% of ours. France stands at 89.4%, West Germany at 88.7%, and Japan at 68.4%. The impact of these figures becomes clear when you note how the productivity growth rates of these countries compare to ours. It is estimated that Canada, France, West Germany, and Japan will pass us in productivity by 1990 if present estimates prove accurate.

The key to a strong economy is positive annual productivity growth at a rate high enough to assure a healthy increase in real hourly income, as more goods and services are produced. The U.S. Chamber of Commerce feels that a 2.5%-3.5% rate of increase is a reasonable goal based on our historical experience and future prospects.

An increase of this magnitude will bring about other benefits to the economy as well. Whenever labor, en-

Figure 5

Productivity Growth in Various Sectors of the Economy: 1948-1980

(Annual Percent Change)

Year	GDP in 1972 $	Private Business Sector	Farm Sector	Non-farm Business Sector	Manufacturing			Nonfarm Non-manuf'g Business
					All Manuf'g	Durable Goods	Non-durable Goods	
1948	4.1	5.3	10.8	4.3	6.3	6.2	6.7	3.1
1949	0.5	1.5	−0.9	2.0	4.0	4.2	4.6	0.8
1950	8.7	7.9	14.1	6.0	5.4	5.8	4.0	6.6
1951	8.8	2.8	0.3	1.7	3.4	1.9	4.3	1.1
1952	3.7	3.2	7.8	2.3	1.8	2.4	0.6	2.6
1953	3.8	3.2	13.7	1.7	1.7	1.2	1.7	1.8
1954	1.2	1.6	5.4	1.4	1.6	0.9	3.7	1.0
1955	6.7	4.0	1.4	3.9	5.0	5.7	3.5	3.5
1956	2.1	1.0	3.5	0.3	−0.7	−3.1	3.0	0.7
1957	1.8	2.5	5.8	1.7	2.1	1.6	2.7	1.5
1958	−0.3	3.1	12.6	2.4	−0.4	−2.4	3.2	3.4
1959	6.0	1.6	−5.5	1.6	4.4	4.8	4.5	2.8
1960	2.1	3.1	9.5	2.5	0.7	0.3	1.2	0.8
1961	2.6	3.3	5.1	2.9	2.7	2.4	3.3	2.9
1962	5.7	3.8	2.7	3.6	4.3	4.8	3.5	3.3
1963	4.0	3.7	7.7	3.2	7.2	6.5	8.1	1.4
1964	5.2	4.3	3.2	3.9	4.8	5.5	3.8	3.4
1965	6.0	3.5	6.4	3.1	3.1	3.7	2.1	3.1
1966	6.1	3.1	4.2	2.5	1.1	0.0	2.6	3.3
1967	2.7	2.2	9.0	1.9	0.0	0.4	−0.7	2.8
1968	4.6	3.3	0.2	3.3	3.5	3.2	4.0	3.2
1969	2.8	0.2	7.4	−0.3	1.7	1.0	2.9	−1.3
1970	−0.2	0.9	13.2	0.3	−0.2	−1.5	1.9	0.5
1971	3.3	3.6	8.9	3.3	6.1	6.3	5.8	2.0
1972	5.6	3.5	−3.3	3.7	5.0	4.9	5.3	3.1
1973	5.5	2.7	1.5	2.5	5.4	3.7	8.0	1.1
1974	−0.7	−2.3	0.6	−2.4	−2.4	−2.8	−1.7	−2.3
1975	−0.9	2.3	9.5	2.1	2.9	2.4	3.4	1.8
1976	5.3	3.3	0.0	3.2	4.4	5.7	2.7	2.7
1977	5.4	2.1	4.5	2.0	2.4	2.6	2.1	1.7
1978	4.6	−0.2	−1.9	−0.2	0.9	1.0	0.8	−0.7
1979	2.8	−0.4	9.5	−0.8	1.0	−0.3	3.1	−1.6
1980	−0.3	−0.4	3.5	−0.6	−0.5	−1.4	0.9	−0.4
1948-1958	3.5	3.3	6.8	2.5	2.7	2.2	3.5	2.4
1959-1969	4.3	2.9	4.5	2.6	3.0	3.0	3.2	2.3
1970-1980	2.8	1.4	3.0	1.2	2.3	1.9	2.9	0.7

Source: U.S. Bureau of Labor Statistics

ergy, and capital or other inputs are used more efficiently, resources are released into the economy to create new goods and services.

Costs of production are also reduced as productivity growth increases, and that can result in either lower prices or higher profits, depending on the demand for the product or service at the time.

What has happened in recent years? America's declining annual productivity growth must be reversed.

To achieve the desired level of productivity growth, action will be required in a number of critical areas. Defining those areas requires a careful examination of the period since World War II.

Figure 5 is based on BLS productivity growth figures in the postwar period—1948 through 1980—and is the basis for determining the averages that show the long-range trends.

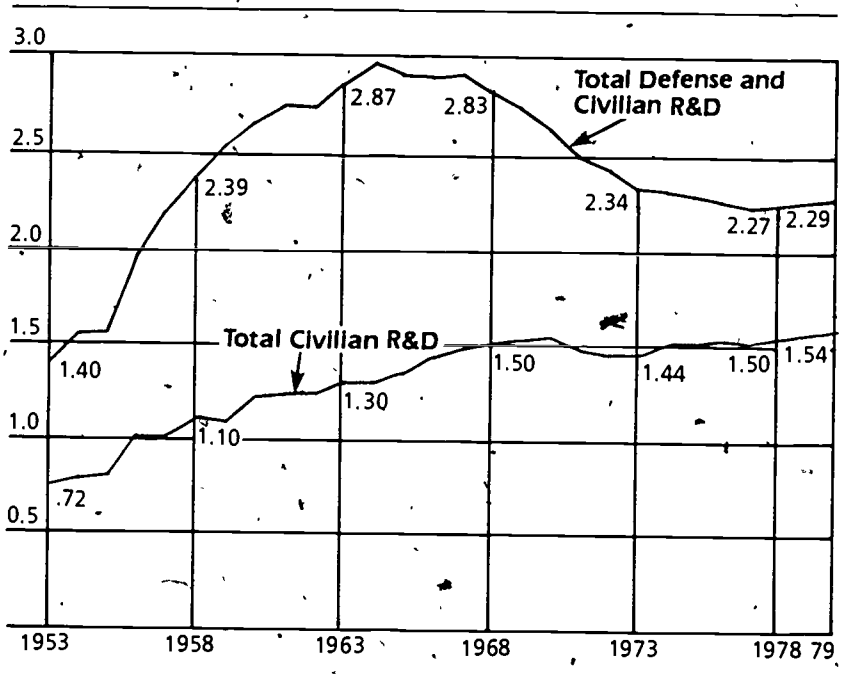
We can learn from the past—1948-1968: America's Economy Takes Off.

In this postwar period, annual productivity growth averaged 3.2%. Many of the factors contributing to this outstanding performance are known. The manufacturing technology gained during World War II was applied to peacetime production. Research and development surged, as indicated in Figure 6. Civilian R & D growth did not increase as fast as for some of our major trading partners, but Figure 7 shows it advanced at a healthy rate nonetheless. Companies invested in new plants and equipment—causing the capital-labor ratio to almost double between 1948 and 1968, as you can see in Figure 8. The shift of labor from farm to more productive non-farm employment improved the measurement figures.

Figure 6

U.S. Spending on Research and Development: 1953-1979

(As a Percent of GNP)



Source National Science Foundation, *National Patterns of R&D Resources,* as presented by George Carlson, Office of Tax Analysis, Office of the Secretary of the Treasury, January 6, 1981

Figure 7

Civilian Research and Development Spending for Selected Countries: 1961-1976

(As a Percent of GNP)

Year	United States	West Germany	Japan	United Kingdom	France
1961	1.22	N/A	1.37	1.48	0.97
1962	1.22	1.14	1.46	N/A	1.03
1963	1.30	1.26	1.43	N/A	1.10
1964	1.30	1.38	1.47	1.46	1.34
1965	1.34	1.53	1.53	N/A	1.37
1966	1.42	1.62	1.47	1.58	1.40
1967	1.48	1.70	1.51	1.68	1.50
1968	1.50	1.72	1 60	1.70	1.54
1969	1.51	1.81	1.64	1.69	1.49
1970	1.52	1.96	N/A	N/A	1.47
1971	1.48	2.16	N/A	N/A	1.37
1972	1.44	2.13	N/A	1.49	1.39
1973	1.44	2.01	N/A	N/A	1.30
1974	1.50	2.27	1.91	N/A	1.34
1975	1.50	2.20	1.91	N/A	1.41
1976	1.45	2.09	N/A	1.50	1.42

Source: National Science Foundation, *Science Indicators: 1978,* as presented by George Carlson, Office of Tax Analysis, Office of the Secretary of the Treasury, January 6, 1981

The strong demand for goods and services that kept plants operating at near capacity was important. An absence of inflationary pressures, expensive energy, and restrictive social regulation provided an excellent climate for productivity to increase. Estimates have been made of how factors like these have affected productivity.

However, at least half of the improvement in productivity during 1948-68 has not been attributed to any specific category. Rather, it has been lumped together under general headings such as "improvements in knowledge," an "explosion in management science," "improvements in quality," and the "unique position America held in the international marketplace" while our competitors were rebuilding economies shattered by war.

By 1968, the stimulative effect of these factors had subsided or was being offset.

1969-1973: The Slowdown Begins.

During the 1969-1973 period, productivity growth fell from an average of 3.2% to 2.2%. The capital-labor ratio began behaving in an uncharacteristic manner, registering unusually small increases in 1972 and 1973, as you can see in Figure 8. Real capital stock growth for these years was moderately below the 4.5% average

Figure 8

The Capital-Labor Ratio: and Its Rate of Change: 1947-1979

(1972 = 1.00000)

Year	Capital-Labor Ratio[1]	Rate of Change	Year	Capital-Labor Ratio[1]	Rate of Change
1947	0.50337		1963	0.78316	2.80
1948	0.53022	5.33	1964	0.80107	2.29
1949	0.55375	4.44	1965	0.81727	2.02
1950	0.57361	3.59	1966	0.84517	3.41
1951	0.58463	1.92	1967	0.88358	4.55
1952	0.60131	2.85	1968	0.90555	2.49
1953	0.61013	1.47	1969	0.92168	1.78
1954	0.64062	5.00	1970	0.96642	4.85
1955	0.63930	−0.21	1971	0.99870	3.34
1956	0.65062	1.77	1972	1.00000	0.13
1957	0.67807	4.22	1973	1.00562	0.56
1958	0.71797	5.88	1974	1.03146	2.57
1959	0.70843	−1.33	1975	1.08788	5.47
1960	0.72451	2.27	1976	1.07754	−0.95
1961	0.75066	3.61	1977	1.06216	−1.43
1962	0.76186	1.49	1978	1.04711	−1.42
			1979	1.04411	−0.29
1948-1958		3.30			
1959-1969		2.31			
1970-1979		1.28			

[1]Private business sector net capital stock data, Divisia aggregated, divided by paid hours of all persons.

Source: U.S. Bureau of Labor Statistics

enjoyed from 1948-1968, as indicated in Figure 9.

U.S. spending on all types of research and development, as a percent of GNP, fell from 2.83% in 1968 to 2.34% in 1973, while civilian R & D fell from 1.50% to 1.44%, according to Figure 6. This was less than the relative commitments of both West Germany and Japan.

The slowdown in this period was abetted by an accelerating inflation that coincided with the advent of Great Society social programs and greater involvement in the Vietnam war. In addition, the first surge of post World War II "babies" entered the labor force, often as unskilled workers needing considerable training. The first impacts of expanding government regulation were felt, as well.

The most conspicuous declines in productivity growth during the 1969-73 period occurred in the non-farm non-manufacturing business sector, as indicated in Figure 5. Mining, construction activity, and the combined category of finance, insurance, and real estate all showed a noticeable slowing in productivity performance. There were exceptions to the general decline during the 1969-1973 period—notably government enterprises, services, and wholesale trade.

1974-1980: The Slowdown Worsens.

The productivity slowdown that began in 1969 accelerated rapidly after 1973. Even excluding 1974, when the decline could be attributed to the deepest recession of the postwar period, productivity growth averaged only 1.1% per year from 1975 through 1980 — the worst record since the Great Depression. As previously noted, the instances of declines caused by recession periods were not followed by substantial and sustained increases in the recovery periods, as might have been expected from historical experience. Negative values were reported for 1978 through 1980.

Growth of the real net capital stock declined severely during this period, as shown in Figure 9. Analysts could remember no other time when the stimulus of economic recovery produced such a weak response in capital investment as during 1976-1979. The increase in the capital-labor ratio slowed considerably during this period, as indicated in Figure 8. The average increase during the 1970's was 1.28%, only 40% of the typical gain—3.3%—from 1948-1968. Indeed, the ratio has actually declined for four consecutive years, beginning with 1976.

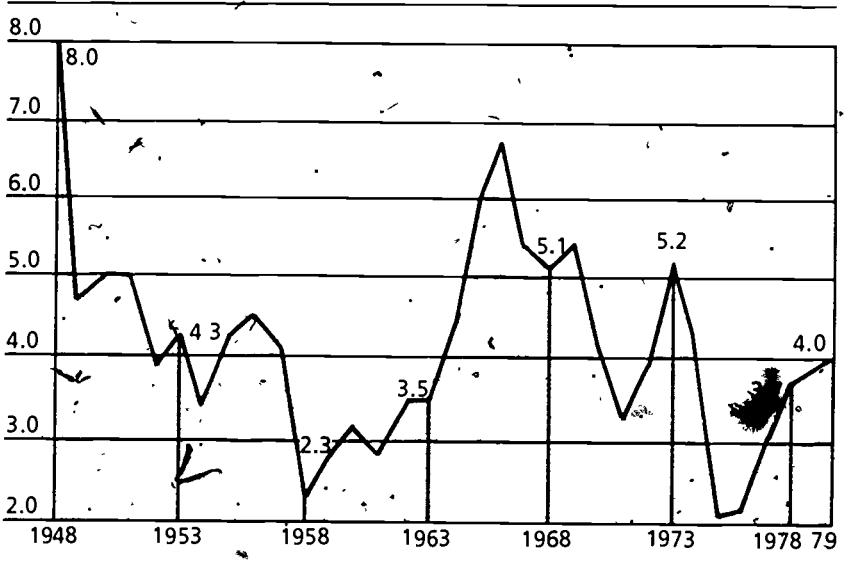
The declines in capital investment and the capital-labor ratio in the 1974-1980 period take on an even more somber perspective when compared with what was happening in other countries. In terms of capital investment, Figure 10 shows us in last place among our major trading partners. As a percentage of GNP, for every three dollars we spent on plant and equipment, Canada, West Germany, and France spent roughly four dollars and Japan spent almost six dollars. And these comparisons would be even more unfavorable if the data were adjusted for the greater regulatory burden imposed on U.S. firms.

As for capital-labor ratios, the United States dropped from first to sixth in

Figure 9

Growth Rate of the Real Net Capital Stock: 1948-1979

(Net Stock of Fixed Nonresidential Private Capital in 1972 Dollars)



Source: U.S. Department of Commerce, *Survey of Current Business*, February 1981, p. 60

terms of capital per worker.

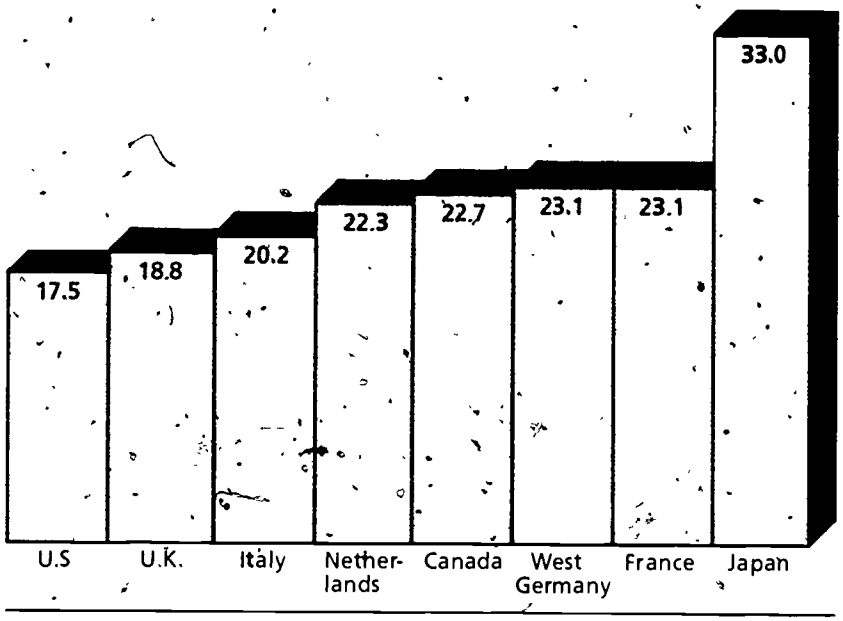
Other measures were also indicating problems in the 1974-1980 period. Figure 11 shows that the average age of structures and equipment stopped declining about 1973-74. Considerable headway had been made previously. Between 1945 and 1973, the average age of structures fell continuously from 21.64 to 13.38 years. The equipment series behaves similarly. The average age of equipment dropped steadily from 10.18 years in 1935 to 6.30 years in 1951, rose to 7.25 in 1962-1963, and declined again to 6.29 years in 1974. At that point, the trend toward modernization came to a halt—and, for the first time since the Great Depression, the age of both structures and equipment began to increase.

During the 1969-1979 period, growth of expenditures for research and development also slowed, especially when related to GNP. Total defense and civilian R & D spending peaked in 1964 and has declined almost continuously since then. However, most of the decline has been in defense and space programs of the federal government — areas not considered of major importance to the national productivity effort. Of more importance is total civilian R & D—for it represents the effort to develop new products and technology that affect our economic well-being. Civilian R & D expanded as a percentage of GNP during the 1960's—to 1.51% in 1969. But then it leveled off, and remained virtually on a plateau through 1979, as shown in Figure 6. Other countries already had surpassed the U.S. effort in civilian R & D by the early 1960's. West Germany and Japan increased their R & D commitments as a percent of GNP during the 1970's, thereby expanding their relative advantage over us, as indicated in Figure 7.

Figure 10

Investment Rates in Selected Countries: 1970-1979

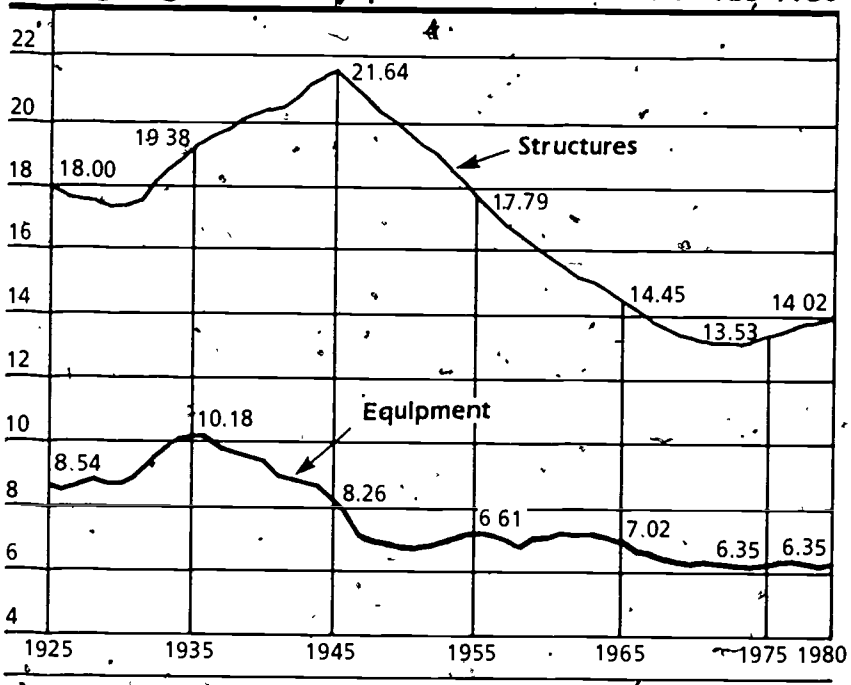
(Gross Fixed Private and Nonmilitary Government Investment as a Percent of GNP)



Source: U.S. Department of Commerce, *International Economic Indicators*, December 1980

Figure 11

Average Age of U.S. Equipment and Structures: 1925-1980



Source: U.S. Bureau of Labor Statistics

Things got worse as the 1970's progressed.

The productivity decline in the 1974-1980 period was more widespread than during 1969-1973.

Productivity growth was down in all sectors relative to the 1960's and the trend got worse over time. In the private business sector there were three years of negative growth — in 1978, 1979, and 1980.

In addition, of 77 specific industry groups measured by the Bureau of Labor Statistics in the 1980 edition of *Productivity Indexes for Selected Industries*, 56 showed a drop in productivity growth in the 1974-1979 period compared to 1947-1979. Only 20 industries showed any improvement; one was unchanged.

Declines were especially significant in bituminous coal mining, blended and prepared flour, brick and structural clay tile, steel foundries, both gas and electric utilities, and petroleum pipelines, as you can see in Figure 12.

Since the decline in productivity growth in the 1974-1980 period was so much greater and more broad based than in earlier times, it is imperative that its causes be carefully determined. Only then can prompt action be taken to turn things around.

IV. THE PRODUCTIVITY PROBLEM EXPLORED

What caused the slowdown? There is no single cause for our lagging productivity performance. But certainly a significant part of the problem relates to the slow growth in U.S. capital investment in new plants, equipment, and technology. If we continue to trail all our major trading partners in growth of investment as a percentage of GNP, we will lose any technological advantages we now have, and be forced to rely on production techniques based on outmoded equipment and inefficient processes. It is obvious that a 30-year-old plant is simply not as efficient as one that is 10 years old.

While we have found ourselves trying to operate with old and obsolete plants, equipment, and processes, key trading partners — especially West Germany and Japan — have rebuilt their industries since World War II, and have kept them modernized with the latest technologies and worker motivation methods.

In effect, they have taken technology we gave them and adapted it to modern economic and social conditions. We have tended to operate as if it's "business as usual" and have not changed sufficiently to meet the competitive needs of the times. Thus, part of our problem is management's increasing aversion to risk and its focus on the short-run, abetted by an uncertain economic environment.

Part of our problem is caused by the requirement to use available capital investment to meet pollution control and work-place safety regulations, and to replace inefficient energy intensive plants and equipment—essential expenditures that do not add to productivity.

Another part of the problem is the lack of incentive to invest.

Figure 12

The Industry Composition of Slower Productivity Growth: 1947-1979 vs. 1974-1979

Industry	Productivity Growth 1947-1979	1974-1979	Industry	Productivity Growth 1947-1979	1974-1979
Iron mining, usable ore[1]	3.6	1.9	Footwear	1.0	1.0
Copper mining, recoverable metal[1]	2.4	6.8	Glass containers	1.9	1.1
Bituminous coal and lignite mining[1]	3.3	-2.6	Hydraulic cement	3.8	2.9
Nonmetallic minerals, except fuels[1]	3.4	2.1	Structural clay products	3.3 (1958-79)	2.4
Fluid milk	4.2 (1958-79)	3.7	Brick and structural clay tile	2.8 (1958-79)	-0.3
Canned fruits and vegetables	3.3 (1958-78)	2.3 (1974-78)	Clay refractories	3.1 (1958-79)	0.5
Flour and other grain mill products	3.8	5.4	Concrete products	3.0	1.3
Cereal breakfast foods	1.3 (1963-78)	1.6 (1974-78)	Ready-mixed concrete	1.5 (1958-78)	0.8 (1974-78)
Rice milling	2.3 (1963-78)	0.9 (1974-78)	Gray iron foundries	2.3 (1954-79)	1.1
Blended and prepared flour	0.9 (1963-78)	-6.4 (1974-78)	Steel foundries	1.2 (1954-79)	-3.1
Wet corn milling	5.7 (1963-78)	9.0 (1974-78)	Primary copper	1.7	5.2
Prepared feeds for animals and fowls	3.7 (1963-78)	2.6 (1974-78)	Primary aluminum	3.5	1.1
Bakery products	2.2	1.2	Copper rolling and drawing	1.9 (1958-79)	4.2
Raw and refined cane sugar	2.3 (1958-78)	2.8 (1974-78)	Aluminum rolling and drawing	5.1 (1958-79)	1.8
Beet sugar	2.6 (1958-78)	1.4 (1974-78)	Metal cans	2.3 (1947-78)	5.1 (1974-78)
Candy and other confectionery products	3.7	2.6	Fabricated structural metal	1.2 (1958-79)	0.0
Malt beverages	5.6	5.1	Construction machinery and equipment	1.9 (1958-79)	0.7
Bottled and canned soft drinks	2.6 (1958-79)	5.5	Ball and roller bearings	2.7 (1958-79)	0.7
Cigarettes, chewing and smoking tobacco	1.5	3.0	Motors and generators	3.1 (1954-79)	0.9
Cigars	5.0	2.8	Household cooking equipment	3.5 (1958-79)	0.3
Hosiery	6.3	5.6	Household refrigerators and freezers	5.5 (1958-79)	3.0
Sawmills and planing mills	2.3	0.8	Household laundry equipment	4.6 (1958-79)	3.7
Veneer and plywood	4.5 (1958-78)	3.3 (1974-78)	Other household appliances	3.7 (1958-79)	4.1
Wood household furniture	2.5 (1958-78)	1.0 (1974-78)	Electric lamps	2.0 (1954-79)	3.6
Upholstered household furniture	1.9 (1958-78)	3.9 (1974-78)	Lighting fixtures	2.6 (1961-78)	3.0 (1974-78)
Metal household furniture	2.3 (1958-78)	2.0 (1974-78)	Radio and television receiving sets	4.1 (1958-79)	4.0
Mattresses and bedsprings	4.0 (1958-78)	2.2 (1974-78)	Motor vehicles and equipment	3.4 (1957-79)	3.5
Paper, paperboard, and pulp mills	3.9	3.4	Railroad transportation, revenue	4.7	3.7
Paper and plastic bags	2.9 (1954-78)	0.5 (1974-78)	Bus carriers, Class I	0.4 (1954-79)	-0.9
Folding paperboard boxes	2.2 (1963-79)	0.9	Petroleum pipelines	7.1 (1958-79)	1.9
Corrugated and solid fiber boxes	3.7 (1958-78)	1.5 (1974-78)	Telephone communications	6.2 (1951-79)	7.3
Synthetic fibers	6.4 (1957-79)	7.8	Electric utilities	5.1 (1958-79)	1.9
Pharmaceutical preparations	4.4 (1963-79)	1.2	Gas utilities	3.1 (1958-79)	-0.2
Soaps and detergents	2.9 (1958-78)	0.2 (1974-78)	Retail food stores	1.6 (1958-79)	-0.9
Paints and allied products	2.9 (1958-79)	4.0	Franchised new car dealers	2.3 (1958-79)	1.4
Petroleum refining	5.0	2.7	Gasoline service stations	4.0 (1958-79)	4.7
Tires and inner tubes	3.7	4.8	Eating and drinking places	0.5 (1958-79)	-2.4
			Drug and proprietary stores	4.6 (1958-79)	1.0
			Hotel, motels, and tourist courts	1.7 (1958-79)	0.5
			Laundry and cleaning services	1.3 (1958-79)	0.3

[1] Productivity is calculated on the basis of output per hour per *production* worker, rather than per all employees

Source: U.S. Bureau of Labor Statistics, *Productivity Indexes for Selected Industries 1954-1979*, April, 1981.

What's happened to investment incentives?

In a market economy, most transactions take place in response to incentives. Producers purchase additional capital goods when the rate of profit is expected to exceed returns on available alternatives. It is widely believed that the threshold return required before producers are willing to invest has risen in recent years, because of uncertainties induced by inflation, economic instability, and government regulation.

You can see from Figure 13 that the return on depreciable assets from 1955-1969 averaged 13.0% and dropped below 10% only in the recession year of 1958. During the 1970's, however, it *averaged* 9.7%. Yet, the relationship between depreciable asset and bond yields is even more startling. Before 1969, depreciable assets returned no less than 6% and occasionally *more* than 10% in excess of "riskless" U.S. Treasury issues. Beginning in 1969 this pattern was broken. As the 1970's proceeded, depreciable assets became markedly less attractive relative to this gilt-edged investment. By 1979, the relationship had reversed. Yields were actually higher on Treasury securities than on productive assets! Treasury bond yields and a recession-induced decline in corporate profits strongly suggest even worse results for 1980.

The ratio of market value to replacement cost of net assets (Tobin's *q*)—also shown in Figure 13—measures the trade-off between new investment and acquisition. When the ratio is above 1.0, the market values financial assets of firms more than the replacement cost of their physical assets. Thus, it should be cheaper to invest in new equipment and plant, rather than acquiring the physical assets of an existing firm. A ratio below 1.0 suggests that it is cheaper to acquire existing assets.

The plunging *q* after 1973 provides a rationale for the observed increase in corporate acquisitions, which doubtless discouraged some new investment. Without an increase in the financial return to investment and a more positive market evaluation of corporate prospects, it is unlikely that the private sector can revitalize itself.

Not only has the incentive to invest been diminished, but increased financial deterioration is eroding even the *capacity* to invest.

From Figure 14, you can see that cash flow, a measure of internally generated funds that can be used to finance new investments, fell sharply as a percent of GNP after 1968. For 1955-1969,

Figure 13

The Attractiveness of Investing in Depreciable Assets: 1955-1980

Year	Rate of Return on Depreciable Assets[1] (1)	Rate of Return on 10-Year Treasury Securities (2)	Difference Between (1) and (2)	Ratio of Market Value to Replacement Cost of Net Assets[2]
1955	14.3	2.82	11.48	0.855
1956	12.2	3.18	9.02	0.837
1957	11.1	3.65	7.45	0.775
1958	9.5	3.32	6.18	0.810
1959	12.2	4.33	7.87	0.977
1960	11.1	4.12	6.98	0.954
1961	11.2	3.88	7.32	1.055
1962	12.9	3.95	8.95	0.998
1963	13.8	4.00	9.80	1.096
1964	14.7	4.19	10.51	1.174
1965	16.1	4.28	11.82	1.247
1966	15.8	4.92	10.88	1.126
1967	14.0	5.07	8.93	1.138
1968	13.8	5.65	8.15	1.174
1969	12.1	6.67	5.43	1.053
1970	9.5	7.35	2.15	0.861
1971	10.1	6.16	3.94	0.939
1972	10.7	6.21	4.49	1.011
1973	10.6	6.84	3.76	0.932
1974	8.1	7.56	0.54	0.666
1975	8.8	7.99	0.81	0.658
1976	9.6	7.61	1.99	0.743
1977	10.1	7.42	2.68	0.656
1978	9.9	8.41	1.49	0.606
1979	9.0	9.44	−0.44	0.561
1980	N/A	11.46	N/A	N/A

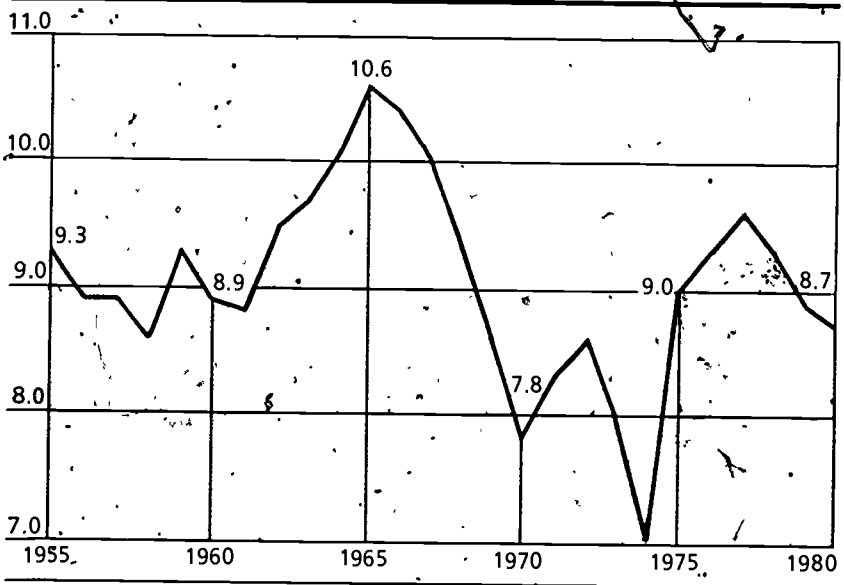
[1] The return on depreciable assets is the sum of pre-tax profits, the capital consumption and inventory valuation adjustments, plus net interest paid divided by the current replacement cost of depreciable assets. Financial corporate assets are excluded.

[2] Market value of equity and interest-bearing debt divided by the current replacement cost of net assets.

Source: *Economic Report of the President 1981*, Table B-65 (bond yields), p. 309, and Table B-86 (depreciable assets and net assets ratio), p. 331.

Figure 14

Cash Flow as a Percent of GNP: 1955-1980



Source: *Economic Report of the President. 1981*, Table B-86, p. 331.

it averaged 9.4%, whereas the average was 8 6% in the years 1970-1980.

Other things unchanged, a falling cash flow means that corporate operations are generating fewer funds through profits and capital cost recovery allowances This implies a need for more equity or debt financing to maintain a given rate of expenditures

But other things were not unchanged

During the 1970's stock prices fell. As a result, equity financing became so unattractive that new issues almost ceased for several years Consequently, firms went heavily into debt, increasing their fixed costs and vulnerability to unexpected events

With declining returns on investment and deteriorating corporate balance sheets, it is not surprising that our capital spending performance has fallen short of our past efforts and those of our trade competitors Without substantial increases in profitability and financial flows to corporations, the U S cannot expect to raise investment materially from its present lackluster pace

What do the experts say? The search for causes of the productivity problem is a relatively new effort among economists. There is not yet a large and accepted body of information on the problem. The experts are just coming to grips with it. Their studies are becoming more sophisticated, but the subject is very complex and there is much more work to be done.

To date, the experts have used a variety of statistical techniques to study some 25 factors that they believe have contributed to the decline of productivity growth. They are.

1 Labor market tightness
2 Cyclical effects
3 Weather, work stoppages
4. Shifts from manufacturing to services
5. Shifts from farm to non-farm employment
6. Shifts out of self-employment
7. Changes in hours worked
8. Labor force composition
9. Education
10 Health and vitality
11. Nonresidential structures and equipment
12. Inventories
13. Other capital
14. Economies of scale
15. Land
16 Energy prices
17 Pollution abatement
18 Other regulations
19. Government services
20 Taxes
21 Expectations
22 Formal advances in knowledge
23 Informal advances in knowledge
24. Diffusion of knowledge
25 Residual factors

Each expert has evaluated their effect—plus or minus—on the overall productivity growth rate and, as might be expected, there is a widespread disparity in the estimates. The variations result from differences in the time frames studied, different economic perspectives built into the models, and different questions asked by the researchers.

In addition—as lengthy as the list is, there are other contributing factors that should be considered—but they have not yet been quantified, or cannot be.

They include. tax disincentives to capital formation and work effort, a change in the work ethic, management deficiencies, measurement errors and insufficient coverage of the economy, slower potential economic growth from increasing resource constraints, and the difficulty of measuring output in today's economy with its growing service/knowledge character.

As complex and uncertain as the causes of the productivity problem may appear, there *are* a number of areas of agreement And it is on them that we can focus our attention.

V. THE ROAD TO RECOVERY

How can we come to grips with the productivity problem? The many different factors that impact on productivity growth can be grouped into three main categories:

- Those that represent *broad social changes* that are difficult to measure, and even more difficult to control or change . . .
  for example, the shift to a service/knowledge economy, the influx of unskilled and inexperienced people in the labor force, a change in the work ethic.
- Those that can be changed and should be the responsibility of the *private sector* . . .
  for example, management approaches to the changed character of today's work force, the adversary relationships between management and labor, the tendency of management to focus on short-range objectives at the expense of more productive long-range achievements, and union "make-work" provisions.
- Those that can be affected by changes in *public policy* . . .
  for example, double-digit inflation, the burden of taxation, restrictive regulations, and the regulatory process itself.

What changes must the private sector make? There is a growing consensus among experts that *the fundamental productivity problem rests with the private sector*—and that significant changes must be made if a healthy productivity growth rate is to be restored. These include changing management and labor attitudes that inhibit productivity growth, and learning how to operate efficiently despite a change in the work ethic that many productivity analysts cite. We are simply not working with people properly Our work force has changed—but management has not yet changed with it What we are doing now has simply not been effective

Management is beginning to learn something from the techniques used by the Japanese—including greater emphasis on programs that enrich the quality of worklife There is evidence that American workers respond to these techniques

Management must also make other changes if productivity growth is to be restored Decision-making must reemphasize perspectives that foster greater long-term profitability and place less stress on short-term earnings. Corporate growth from productive investment must be stressed, rather than such great emphasis on mergers, diversification, and integration. Management must become relatively more aware of the importance of production and technology, and focus less on risk minimization.

More R & D is needed to improve processes of production. New lines of business must be stressed, instead of relying so strongly on approaches that involve new packaging, superficial product changes, heavy development budgets, and low budgets for basic research.

Such changes may require a reordering of managerial experience, which has increasingly emphasized financial and legal expertise instead of engineering. Strategic decision-making should be encouraged to improve dynamic efficiency and competitive strength by producing superior goods and services

Perhaps most of all, managers should be encouraged to develop more of an entrepreneurial approach to their jobs. More confidence is needed to deal realistically with the productivity problem, to institute new concepts and ideas, to look ahead to the future and take actions accordingly. This may even include revising traditional concepts of growth and profit levels.

What role can the government play? Government actions can complement and enhance private sector initiatives in restoring healthy productivity growth in many areas. While not a substitute for private sector initiative, public policy can act in two ways to improve productivity growth

First, and most important, continuity in economic policy is essential to capital formation and long-run decision-making Setting and maintaining long-run monetary growth targets are critical in this regard. Strict controls on government spending would also afford a measure of continuity in public policy.

Second, removing public policy barriers to productivity growth is an important step government can take. Such barriers include regulatory and tax disincentives to productive investment, and pricing policies that reduce economic efficiency by distorting prices from their market values.

The U.S Chamber of Commerce believes that the people of this nation can no longer delay a confrontation with the productivity challenge. Public policy has a direct effect on productivity, and therefore on the living standards of the people of America. On their behalf, the Chamber is committed to an advocacy role in public and private forums, to encourage new policies that will enhance U.S. productivity performance. This effort is coordinated and directed by the Chamber's Productivity Center.

The productivity problem has been building for more than a decade. There is no "quick fix" solution—temporary or emergency programs to meet special needs. Rather, the problem calls for systematic and fundamental changes in the nation's overall economic environment, the nation's tax system, and the regulatory process, especially as it has affected energy.

We can adjust policies that contribute to inflation and uncertainty.

The link between productivity and inflation usually refers to the impact of changes in productivity on inflation. There *is* a link between the slowdown in productivity growth in the 1970's and the resulting acceleration in inflation Clearly, however, far more important factors affect the rate of inflation than changes in productivity. But the question has been asked—is there a *reverse* link? Does rapid inflation cause productivity growth to decline?

At least one study isolates inflation as the most important single factor affecting productivity performance in recent years. While no quantative estimate has been made, and perhaps cannot be made, a strong theoretical case exists for this view.

First, the acceleration of inflation and the slowdown in productivity growth occurred virtually simultaneously. Second, the government's uncertain monetary policies aimed at controlling inflation took the form of constant stimulation and then restriction of the economy during the business cycle, leading to sharp swings in economic performance. This unpredictable stop-and-go action caused lower plant utilization during those times when the economy was being artificially slowed—thereby reducing productivity.

Federal spending has continued to exceed revenues, creating huge budget deficits that crowd out productive private investment.

Other effects of inflation on efficiency and incentives are undoubtedly important Inflation increases the cost of assembling information for monitoring and managing business performance It reduces the incentive to make significant commitments to research and development, increases the uncertainty and risk in long-range investment compared to speculative financial activity, and tends to deflate the measure of output.

With such an unstable and inflationary economic environment, businesses are reluctant to make long-term investment commitments.

Think about your own situation—how is inflation affecting your business organization? Your personal life? Isn't it time to do something about it?

We can review tax policy as it affects capital investment.

For the past decade or more, the United States has had a very poor record regarding capital formation. The problem is caused in part by a tax system that is biased against investment. Tax rates on investment income are higher than for wages and salaries. High corporate tax rates lead to a very low rate of return on productive investment and cause cash flow to dwindle. Depreciation provisions are inadequate. Corporate earnings paid out to shareholders are taxed twice, once as corporate income and then again as dividends to the shareholder. In addition, rising earnings and the inflationary environment lead to capital gains, which are taxed also.

As has been shown, all of our major trading partners—even Great Britain—have devoted a larger share of GNP to investment than we have. All have higher personal savings rates. Several have higher civilian research and development investment ratios as a percent of GNP And most have plants and equipment that are significantly newer than ours. Analysts have frequently cited our low rate of investment as a crucial factor accounting for lagging U.S. productivity performance.

. . . as it affects R & D

It is clear that U.S companies must have greater cash flow available for research and development—basic, as well as applied At the present time, the trend in industry is to use the R & D money that is available for applied research instead of basic research This is an ominous shift because it means fewer fundamental breakthroughs in the years ahead. This will be the case until changes are made in our tax system to permit a greater return on investment.

Consider how tax policies affect *you!* Isn't it time to take some action?

We can look carefully at regulatory policy affecting investment and R & D.

It seems clear that the dramatic national decline in productivity growth since the late 1960's came about in part because of the proliferation of federal laws and regulations dealing with health, safety, the environment, and energy. Little thought was given to the economic consequences of their enactment. Yet, the total cost of regulation in one year (1980) has been estimated at $126 billion. Compliance costs totalled $120 billion, and an additional $6 billion was spent on administrative costs. Civilian research and development has become less effective at promoting productivity gains, because companies need to divert R & D resources to defend and prove product claims, as required by government regulations.

Regulations have had a particularly severe impact on certain specific industries Environmental regulations have required huge expenditures from the copper, coal, iron and steel, chemicals, paper, and oil refining industries. Productivity growth in mining began to decline in 1969 when the Federal Coal Mine Health and Safety Act was passed. It has fallen rapidly in recent years, even as more coal has been mined in response to the energy crisis and the high cost of oil. Productivity growth in transportation has fallen off significantly since 1973, partly because of EPA regulations, as well as rising energy prices.

Think about your own organization, and how government regulatory policies are affecting it Isn't it time for a change?

Regulations have contributed to our energy problem . . .

The impact of government regula-

tions has been especially severe on energy-intensive industries—because of the added burden imposed by high energy prices.

The slowdown in productivity growth parallels the OPEC-induced increases in world energy prices that started in 1973. Studies where the main productivity effect of energy is presumed to be its impact on capital formation conclude that one-third to one-half of the capital effect in declining productivity growth is due to energy. High energy prices have affected the capital-labor ratio, by increasing the cost of production. Energy-intensive plants and equipment have been made obsolete. While many companies are investing in more energy-efficient plants and processes, many others have been reluctant to make the investment because of inflation and generally uncertain economic conditions. Consequently, there has been a tendency to substitute labor for capital and energy, resulting in lower productivity.

Government laws and regulations contributing to the problem include the Clean Air Act, the Clear Water Act, the Fuel Use Act, the Natural Gas Policy Act, the National Energy and Conservation Act, and nuclear safety regulations. All have imposed severe restraints on the development and production of energy and have played a role in restricting productivity growth. The cost of meeting government regulations in the area of health, safety, and the environment add to the problem.

Here's what can—and must—be done.

The U.S. Chamber recommends the following actions as a way to reverse the slowdown of productivity growth, restore vigor to the American economy, and improve the standard of living of the people:

1. Provide tax relief for business and individuals, including a revised capital cost recovery system, reduction in the marginal income tax rates applied to individuals and corporations, an end to double taxation of corporate income, and reduction in the capital gains tax rate.
2. Reduce inflationary pressures on the economy by stable money growth and significant cuts in federal spending.
3. Revamp or repeal specific regulations that are counter-productive or cost-ineffective; reform the entire regulatory process to prevent excessively restrictive regulations from being inflicted on the productive part of the economy; and establish a consistent energy policy that develops our own energy resources, removes price controls on energy supplies, and provides for multiple-use of federal land.

For a list of current bills before Congress which would help accomplish these objectives, call or write the U.S. Chamber's Productivity Center.

Can we do the job? We can—with the help of all concerned Americans. A massive effort is underway to change the direction we have been moving for the past decade or so, to reverse the declining trend in productivity. It's an effort that everyone can join, for our standard of living is at stake.

The charts, graphs, and tables lay it all out for everyone to see. And yet, the bars and lines and numbers reflect what every person can tell from his grocery bill, or on the gas pump, or at the clothing store. They say that we are losing ground to inflation—and it has to be brought to a stop. Taking steps to increase the growth of productivity is one way this can be done.

We have created the problem for ourselves. We believed our great system of private enterprise could continue to carry us to higher and higher standards of living. We thought we could do it and still support well-meaning but enormously expensive social and environmental objectives. We shackled the system with taxes and regulations that kept it from functioning efficiently. We created an unstable economic environment that made long-range planning difficult or impossible. In essence, we made it virtually impossible to support ourselves in the style to which we had grown accustomed.

Now—we are setting out together to change all that.

The U.S. Chamber of Commerce and its Productivity Center are taking a leadership role in the attack. And all Americans are invited to take part. Keep up with proposed legislation affecting productivity, and let your elected representatives know your concern. If you are in a position to make your company more productive, do so. If you are a public official, speak out. Let everyone know that changes must be made in the way we do business. Many of the old ways simply won't work any more.

We must change our policies and our ways. When these changes are made, it is the people of America who will benefit.

Appendix

A. Tables of Supporting Data

Table A-1

Figure 2

Real Spendable Average Weekly Earnings: 1947-1980

(In 1967 Dollars)

Year	Weekly Earnings	Year	Weekly Earnings
1947	$66.73	1964	$88.88
1948	67.28	1965	91.67
1949	69.66	1966	91.21
1950	72.18	1967	90.86
1951	71.71	1968	91.44
1952	72.79	1969	91.07
1953	75.29	1970	90.20
1954	75.59	1971	92.69
1955	79.06	1972	97.11
1956	80.86	1973	95.70
1957	80.32	1974	91.14
1958	79.80	1975	90.35
1959	82 31	1976	91.42
1960	82.25	1977	93.63
1961	83 13	1978	92.54
1962	84.78	1979	89.41
1963	85.67	1980	83.11

Source: U S Bureau of Labor Statistics, as found in *Employment and Training Report of the President*, September, 1980 Table C-11.

Table A-2

Figure 6

U.S. Spending on Research and Development: 1953-1979

(As a Percent of GNP)

Year	Total Defense and Civilian	Total Civilian	Industry	Federal Nondefense	Universities and Others
1953	1.40	0.72	0.61	0.07	0.04
1954	1.54	0.77	0.64	0.09	0.04
1955	1 55	0.78	0.63	0 12	0.03
1956	1.99	1.00	0.79	0.16	0.05
1957	2.20	1.00	0.78	0.18	0.04
1958	2.39	1.10	0.83	0.22	0.05
1959	2.54	1.09	0.84	0.20	0 05
1960	2.67	1.21	0.89	0 27	0.05
1961	2.74	1.22	0.91	0.25	0.06
1962	2.73	1.22	0.91	0.25	0.06
1963	2.87	1.30	0.92	0.31	0.07
1964	2.97	1.30	0.93	0.30	0 07
1965	2 91	1.34	0 95	0.32	0.07
1966	2.90	1.42	0.97	0.38	0.07
1967	2.91	1.48	1.02	0 39	0 07
1968	2 83	1.50	1.04	0.39	0.07
1969	2.74	1.51	1.07	0.36	0 08
1970	2 64	1.52	1 06	0.37	0.09
1971	2.50	1.48	1.02	0.38	0.08
1972	2.43	1.44	1.00	0.36	0.08
1973	2.34	1.44	1.02	0.35	0.07
1974	2.32	1.50	1.05	0.37	0.08
1975	2.30	1.50	1.03	0.39	0.08
1976	2.28	1.51	1.05	0.38	0.08
1977	2.26	1.50	1.04	0.39	0.07
1978	2.27	1.52	1.05	0.38	0.09
1979	2.29	1.54	1 08	0.38	0.08

Source: National Science Foundation, *National Patterns of R&D Resources*, as presented by George Carlson, Office of Tax Analysis, Office of the Secretary of the Treasury, January 6, 1981.

Table A-3

Figure 9

Growth Rate of the Real Net Capital Stock: 1948-1979

(Net Stock of Fixed Nonresidential Private Capital in 1972 Dollars)

Year	Growth Rate	Year	Growth Rate
1948	8.0	1966	6.7
1949	4 7	1967	5.4
1950	5.0	1968	5.1
1951	5.0	1969	5.4
1952	3.9	1970	4.2
1953	4.3	1971	3 3
1954	3 4	1972	3.9
1955	4.3	1973	5.2
1956	4.5	1974	4.3
1957	4 1	1975	2.1
1958	2.3	1976	2.2
1959	2.8	1977	3.1
1960	3.2	1978	3.7
1961	2.8	1979	4.0
1962	3.5	1948-1958	4.5
1963	3 5	1959-1969	4.4
1964	4.4	1970-1979	3.6
1965	6.0		

Source U S Department of Commerce, *Survey of Current Business*, February 1981, p 60.

Table A-4

Figure 11

Average Age of U.S. Equipment and Structures: 1925-1980

Year	Equipment	Structures
1925	8.54	18.00
1926	8.52	17.88
1927	8 55	17.70
1928	8.59	17.59
1929	8.55	17.44
1930	8.67	17.43
1931	8.97	17.67
1932	9.40	18.09
1933	9.81	18.55
1934	10.08	18 99
1935	10.18	19.38
1936	10.08	19.66
1937	9.83	19.82
1938	9.81	20.06
1939	9.69	20.28
1940	9.38	20.43
1941	8.97	20.46
1942	8.93	20.74
1943	8.90	21.14
1944	8.70	21.47
1945	8.26	21.64
1946	7.80	21.19
1947	7.11	20.82
1948	6.65	20.43
1949	6.48	20.11
1950	6.35	19.77
1951	6.30	19.38
1952	6.35	19.02
1953	6.39	18.62
1954	6.53	18.21
1955	6.61	17.79
1956	6.70	17.28
1957	6.78	16 84
1958	6 95	16.49
1959	7.05	16 17
1960	7.13	15.85
1961	7.23	15.55
1962	7.25	15 26
1963	7.25	15.03
1964	7.18	14.77
1965	7.02	14.45
1966	6.82	14.14
1967	6.69	13.93
1968	6.59	13.76
1969	6.49	13.59
1970	6.46	13.50
1971	6.47	13.45
1972	6.45	13.42
1973	6.34	13 38
1974	6.29	13 41
1975	6.35	13.53
1976	6.39	13.66
1977	6.38	13.79
1978	6.35	13.89
1979	6.32	13.94
1980	6.35	14.02

Source: U.S. Bureau of Labor Statistics.

Table A-5

Figure 14

Cash Flow as a Percent of GNP: 1955-1980

Year	Cash Flow As A Percent of GNP	Year	Cash Flow As A Percent of GNP
1955	9.3	1968	9.4
1956	8 9	1969	8.6
1957	8.9	1970	7.8
1958	8.6	1971	8.3
1959	9.3	1972	8.6
1960	8.9	1973	8.0
1961	8.8	1974	7.0
1962	9 5	1975	9.0
1963	9 7	1976	9.3
1964	10 1	1977	9.6
1965	10 6	1978	9.3
1966	10.4	1979	8.9
1967	10.0	1980	8.7

Source *Economic Report of the President: 1981*, Table B-86, p 331